Corresponding-States Correlations and Rarefied Gas Thermal Conductivity in a Methane Mixture with Ethane

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A new semiempirical corresponding-states scheme for the prediction of rarefied gas mixture thermal conductivities is described. Predictive calculations, with the methane-ethane mixture as a model system, are used to analyze this correlation. An attempt is made for the 50-50% methane-ethane binary mixture. While the numerical slope for the thermal conductivity is “forecast”, the quality of the relationships obtained depends directly on the accuracy of the limited original experimental information used in the prediction procedure. Calculated results are tested to show how such approximations have proved to be in reasonable agreement with the thermal conductivity data available in the literature for methane, ethane and their mixtures.